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ABSTRACT

Harcum Junior College has offered a reading development program for freshmen since September, 1966. Incoming freshmen who score below 30th percentile rank on the Nelson-Denny Reading Test are required to enroll in this program. To evaluate gains made by 51 September, 1970 freshmen who completed the program, the Nelson-Denny pretest and post-test scores were analyzed. Based on the Nelson-Denny percentile ranks, average vocabulary improvement equaled 44 percent, and average comprehension improvement was 37 percent. More than 80 percent of the students achieved post-test percentile ranks above the 30th percentile. These results are associated with the success of the reading program and plans for its continuance in the future. Questionnaires pertaining to the reading preferences, habits, and skills of Harcum students when compared to six community colleges of the City University of New York are summarized and compared in RE 003 452. References are included. (DH)

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# Reading Improvements Associated With Harcum Reading Development Program

Office of Research
IRR 70-64

A Research Study
Sponsored by
Harcum Junior College
Bryn Mawr, Penna. 19010

RE003 453

HARCUM JUNIOR COLLEGE
BRYN MAWR, PENNA. 19010

Office of Research
IRR 70-64

# READING IMPROVEMENTS ASSOCIATED WITH HARCUM READING DEVELOPMENT PROGRAM

1. "Reading is the key tool that eventually affects proficiency in all academic learning. Also, in college, students face a more difficult reading task than in high school as their education moves in the direction of more learning from books rather than from teachers." (1)

2. "In spite of countless inquiries within the field, conclusions about the verbal skills of junior college students remains relatively stable." (2) Additionally, as noted by Dr. Cross, "it is consistently reported that, on the whole, two year college students are not as verbally proficient as their peers elsewhere in higher education." (3) And finally, "Philip Shaw states in his review of research pertaining to college reading that a majority of entering freshmen lack the reading-study skills requisite for academic success." (4)

3. Recognizing the importance of verbal-reading skills proficiency to effective learning, Harcum has offered a reading development program for freshmen since September 1966. Attendance at this program, offered by the college Reading and Study Skills Clinic, is mandatory for those incoming students who score poorly (below the 30th percentile) on the Nelson-Denny Reading Test; one of several tests and inventories administered during Freshman Orientation Week. Course attendance is optional for other students who wish to improve their reading skills and talents. The Reading and Study Skills Clinic offers several developmental reading and study skills courses geared to develop greater reading speed, better comprehension, accurate retention, good concentration, improved vocabularly, and more efficient and effective study skills and habits.

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(1) Blai, Jr., Boris, "Reading Preferences, Skills and Habits of Harcum Junior College and City University of New York Community College Students" IRR 70-63, Harcum Junior College, (mimeo report) December 1970

(2) Cohen, Arthur M & Quimby, Edgar A. "Trends in the Study of Junior Colleges: 1970" Junior College Research Review. AAJC. Vol5, No.1. Sept. 1970

(3) Cross, K. Patricia, "The Junior College Student: A Research Description" Princeton, Educational Testing Service, 1968

(4) Bossome, Richard, M. "The Reading-Study-Skills Problems of Students in Community Colleges of the City University of New York." Hostos Community College, (mimeo report) 1970

4. In accordance with the rationale of the Nelson-Denny, a "Total" score below the 30th percentile indicates a high probability of a reading problem. The comparison or norm group to which these percentiles apply consists of some 4000 college freshmen who were selected as a random sample from freshmen enrolled in universities, liberal arts colleges, teachers colleges, junior colleges and technical schools. It has been noted that the Nelson-Denny Reading Test provides a very useful measure of this key academic skills area, both in terms of vocabularly knowledge and comprehension capability. It furnishes helpful, objective information for academic achievement prediction; scoring; and broad diagnostic purposes.

5. "Research with the Nelson-Denny indicates a close relationship between the test scores and scholastic achievement; - an average correlation of r = .67. For such a pair-wise, linear association, the Coefficient of Determination ($r^2$) indicates the strength of association between two populations or measures of population attributes. For example, the r=.67 between the two criterion variables of Nelson-Denny scores and scholastic achievement indicates that 45% of the variations between the two criterion variables may be attributed to these two criterion variables. In other words, almost half of the variation between 'high' and 'low' academic achievement is associated with 'high' and ' low' Nelson-Dnny scores. This is a substantial degree of association or correlation, making the Nelson-Denny scores very valuable predictors of academic success."(5)

6. To ascertain the practical results (improvements associated with) the Harcum Reading Development Program, some 51 September 1970 freshmen who completed the program were posttested with the Nelson-Denny. The results of the pre-post-test administrations are summarized in the following paragraphs.

7. Based upon the percentile ranks of the pre-and-post-test scores earned, the following results are noted:

(1) Average Vocabulary Improvement = 44%
(2) Average Comprehension Improvement = 37%
(3) Average "Total Improvement = 42%

(4) Range of Vocabularly Improvement = 1% to 79%
(5) Range of Comprehension Improvement 1% to 87%
(6) Range of "Total" Improvement = 1% to 76%

8. Each student attending the Reading Development Course (with the exception of one who scored lower on comprehension) evidenced some improvement in all three areas of vocabulary, comprehension, and total Nelson-Denny achievement; from a

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(5) Blai, Jr., Boris, "Interpreting Nelson-Denny Reading Test" Research Memorandum, Harcum Junior College, (mimeographed) November 1970

minimum of 1% improvement to a maximum of 87% in comprehension. It is also noted that better than 4/5ths of those successfully completing the program achieved post-test Nelson-Denny percentile ranks above the 30th "total" percentile, (the cut-off point below which a high probability exists of a reading problem.)

9. Clearly then, substantial average improvements in both vocabulary and comprehension skills are noted. However, it is pertinent to inquire whether these improvements are, ;in fact, statistically significant, or whether they might have occured through sampling fluctuations.

10. Perhaps the most common problem in educational research is to determine whether two samples differ sufficiently in a selected characteristic to discredit the hypothesis that the samples are from populations similar in the selected characteristic. In this connection it should be noted that facts and hypotheses are in reciprocal relationship: the facts suggest and support the hypothesis -- the hypothesis explains or accounts for the facts. The pertinent hypothesis here is the so-called null hypothesis. To accept the null hypothesis is to conclude that the observed difference between the two samples is due to chance; to reject the null hypothesis is to conclude that the difference is nonchance or REAL. If the difference between the samples is too great to be reasonably attributed to sampling fluctuations, the null hypothesis is rejected, and the conclusion follows that real differences exist in the populations from which the samples were drawn. In short -- such differences which cannot reasonably be ascribed to chance variations (or sampling fluctuations) are said to be significant.

11. To calculate the significance of the difference between two obtained averages, the following formula was applied to the pre-and-post test percentile averages earned by this group of Harcum freshmen in the Vocabulary, Comprehension and Total elements of the Nelson-Denny Reading Test:

$$\sigma_D = \sqrt{\sigma_{M_1}^2 + \sigma_{M_2}^2}$$

(standard error of the difference between two uncorrelated means)

12. An obtained difference between two averages ("D") is considered to be significant if the odds are great that the true difference between the groups is greater than zero. It is customary to take a $D/\sigma_D$ of 3 as indicative of a significant difference. Stated otherwise, this represents a virtual certainty that the true difference between the two groups is greater than zero, since there is only about 1 chance in 1000 that the true difference between the two groups is not greater than zero.

13. In terms of probability, Table 1 summarized the chances in 100 of a statistically significant difference between the average percentiles of the pre-and-post test Nelson-Denny scores.

Table 1: Nelson-Denny Pre-and-post Test Average Percentiles and the Reliability of the Differences Between These Two Averages

| ITEM | Pre-test | Post-test | D/SD | chances in 100 |
|---|---|---|---|---|
| Vocabulary | 19 | 59 | 1.60 | 94 |
| Comprehension | 18 | 54 | 1.20 | 88 |
| Total | 16 | 42 | 2.8 | 99.74 |

14. Scanning Table 1, it is most clearly evident that the chances (probabilities) of statistically significant differences existing between the pre-and-post test performances in each of the three items, (vocabulary, comprehension, and "total") are very high. In the case of the "total" Nelson-Denny percentiles, which is a weighted composite of the other two dimensions (vocabulary and comprehension), the probability of the pre-post test differences being statistically significant is a virtual certainty.

15. It is therefore concluded, from this analysis of student reading performance (before and after completion of the Harcum Reading Development Program), that there is a substantial degree of improvement, both in vocabulary and comprehension skills. Most importantly, these differences are statistically significant; the improvements that occurred are too great to be reasonably attributed to sampling fluctuations. The null hypothesis is therefore rejected -- these differences are considered non-chance or REAL, and they can be directly associated with successful completion of the Reading Development Course.

16. Needless to say, the program will be continued in the future, particularly to assist those students experiencing reading difficulties and problems. Harcum recognizes the vital importance of reading skills proficiency to effective learning.

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Director of Research

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